

Ellipsis of echo question: In-situ analysis

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Youngdong, Cho. 2020. Ellipsis of echo question: In-situ analysis. *SNU Working Papers in English Linguistics and Language* 17, 1-24. This paper investigates an ellipsis phenomenon of echo questions in English. Given that echo *wh*-element does not undergo movement intrinsically, English echo ellipsis should be derived via in-situ deletion rather than movement and deletion approach proposed by Merchant (2001, 2004). The in-situ analysis in this article adopts the idea of Abe (2016)'s in-situ deletion analysis of short answers. If the identification condition on ellipsis site is satisfied, deletion occurs leaving the focused remnant survived. This condition is determined by presupposition, which is semantic in nature. Moreover, the focused remnant surviving the deletion can vary in size, which results from the unrestricted vertical focus projection following Büring (2006). (Seoul National University)

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1. Introduction

This paper develops an analysis of ellipsis of echo question (echo ellipsis, henceforth) in English. Echo questions constitute reprise questions with reference questions according to Ginzburg and Sag (2001). Although they are categorized as one type of construction, they have some different properties. Many studies (including Bartels, 1999; Artstein, 2002; Reis, 2017, etc.) found that phonologically, echo questions bear final rise intonation while reference questions bear final fall intonation. Also, they have different linguistic function in that echo questions ‘echo’ the immediately preceding utterance to indicate misperception or show surprise as in (1), while reference questions such as (2) ask for clarification of the pronoun that the speaker is unaware of. (Note that *wh*-element in echo question is capitalized to show that it gets focus and accent.)

- (1) A: Bustamente y Bacigalupo plays the violin badly.
B: WHO plays the violin badly?

- (2) A: They are mad at Bustamente y Bacigalupo.
B: WHO is mad at Bustamente y Bacigalupo?
(Ginzburg and Sag, 2001, p. 255)

This paper narrows the interest down to echo questions. In echo questions, the echoing element indicates that (i) the speaker of the echo questions misperceives or mishears what has been just addressed or (ii) the speaker expresses surprise or refusal to accept the interlocutor's utterance. Echoing element can be exactly the same element given in the previous utterance or *wh*-element as in (3B).

- (3) A: I gave John Mercedes for gift.
B: You gave John MERCEDES/WHAT for gift?

Artstein (2002) examines echo questions of both cases, and concludes that *wh* and non *wh*-echo questions serve the same function. I agree with his analysis and focus on the data with *wh*-echo questions. The reason I chose *wh*-echo questions for explanation is that *wh*-echo questions can show the difference from standard *wh*-questions in that two *wh*-elements function differently in spite of having the same form. Thus, the data discussed in this study will all have *wh*-element. The analysis of *wh*-echo questions can be extended to non *wh*-echo questions as well since they have the same function (Artstein, 2002).

The term reprise fragment (or sluice) is used in the non-transformational literature such as Ginzburg and Sag (2001) to indicate echo ellipsis phenomena. Such examples are given in (4).

- (4) A: Did Jo phone?
B: WHO?

WHO in (4B) indicates *Jo* in the previous sentence (4A). In spite of being used frequently, echo ellipsis hasn't received much attention in the literature of transformational perspective. In this paper, I argue that remnant of echo ellipsis is derived from the full-fledged sentence and this derivation does not include movement of *wh*-element to the edge of the clause. In other words, echo ellipsis is derived via in-situ deletion.

The article is organized as follows: In section 2, I briefly introduce the properties of echo questions which are crucial for analysis of echo ellipsis. It will be discussed that the most important property of echo questions is that *wh*-element does not undergo movement; it stays in-situ. Section 3 investigates the examples of echo ellipsis and emphasize that movement and deletion approach of ellipsis proposed by Merchant (2001) is inappropriate to account for instances of echo ellipsis. In section 4, I introduce Kimura (2010)'s in-situ analysis of sluicing and Abe (2016)'s in-situ analysis of fragment answers. Employing their ideas of analysis, in section 5 I propose the in-situ analysis of echo ellipsis which has not been examined in the literature. Griffiths, Güneş, and Lipták (2018a, b) suggested analysis of reprise fragments using QUD; however, in my opinion, the analysis proposed in this paper works better in the frame of the previous analyses of ellipsis phenomena—ellipsis is derived from full-fledged sentence. In section 6, it is argued that the remnant of echo ellipsis varies in its size, which results from the unrestricted vertical focus projection proposed in Büring (2006). Section 7 is the conclusion.

2. Properties of echo questions

As shortly mentioned in the previous section, English echo questions have distinctive properties from standard *wh*-questions. The general characteristics of echo questions should be considered in advance since this general aspect has an effect on the echo ellipsis. The following analyses in this section are based on the previous studies on echo

questions. (Ginzburg and Sag, 2001; Artstein, 2002; Sobin, 2010; Reis, 2017; Beck and Reis, 2018)

According to Sobin (2010), echo *wh*-questions are divided into two subtypes: syntactic echo question and pseudo echo question.

- (5) A: Mary had tea with Cleopatra.
 B: Mary had tea with WHO? syntactic echo question
 C: Who did Mary have tea with? pseudo echo question

A standard echo question is a syntactic one like (5B) in which *wh*-element stays in-situ and gets pitch accent. Pseudo echo questions have some constraints on the clause type of previous utterance. They only echo declarative sentences. Echoing yes/no questions or *wh*-questions is impossible as in (6) and (7) respectively; on the other hand, syntactic echo questions echo every clause type even including imperative sentence.

- (6) A: Did Mary have tea with Cleopatra?
 B: ?Who did Mary have tea with? (cannot be echoed)
- (7) A: What did Dracula drink at Mary's party?
 B: *What did who drink at Mary's party?

Being more common and having more general distribution, the data covered throughout the current study are syntactic echo questions. Now let's see what properties echo questions show in general.

2.1 Discourse properties

Echo questions always echo the immediately previous utterance. This constraint is identified as 'adjacency' condition in Beck and Reis (2018). The echo question in the following example (8) does not sound natural

since B's additional utterance is positioned between the echoed and echoing utterances. Without intervening utterance, (8B') serves as an echo question.

- (8) A: Tom invited our president.
B: An invitation—usually Tom is so stingy! # (But) Tom invited WHO?
B': Tom invited WHO?

The major analysis of echo questions in the literature is that echoing questions echo the exactly same sentence (or structure) that is echoed. That is, the relation between two sentences is ‘quotative’ in that echo questions just quote the previous utterance in the sense of question. According to this account, echo questions would not be a syntactic phenomenon since it just copies the previous utterance. This perspective can be stated as follows:

- (9) Semantics for echo questions
Which expression X is such that you said “... X...”?
(Sobin, 2010, p.135)

This approach, however, fails to capture broader use of echo questions. It is not the case that echo questions always copy the exactly same structure or elements from the previous utterance. Rather they pick up some elements of the previous utterance with different linguistics forms. Even voice mismatch could take place between two utterances as shown in (10). Also, (11) shows that the verb agrees with *wh*-element irrespective of the plurality of its antecedent. This shows that syntactic operation does take place in the echo questions. How echo questions are derived will be dealt with in section 5 later. To recapitulate briefly, echo questions ‘echo’ the immediately preceding utterance, and the structure and its content are retained in echo questions somehow.

- (10) A: Has Mary eaten the fried worms?
B: Has WHAT been eaten by Mary?
(Sobin, 2010, p.135)
- (11) A: The Gringos are angry.
B: WHO *are/is angry? (Beck and Reis, 2018, p.377)

2.2 Formal properties

The most striking and core formal property is that *wh*-element stays in-situ in echo questions. Unlike standard *wh*-questions in English, *wh*-element in echo questions is not fronted. It gets meaning of question in its base-generated position. Previously mentioned examples already show this property. Secondly, echo questions are insensitive to locality, which means they do not show island effect. In standard *wh*-questions, *wh*-element in the island cannot be fronted as shown in (12).

- (12) A. The man that kissed Dracula is coming to dinner.
B. * Who is the man that kissed t coming to dinner?
- (13) A: The man that kissed Dracula is coming to dinner.
B: The man that kissed WHO is coming to dinner?
(Artstein, 2002)

In (12), the *wh*-element is in the complex NP island from which it cannot escape and be fronted. *Wh*-element in (13), however, is compatible with the complex NP island and construed as its intended question meaning. This results from the inherent in-situ property of *wh*-element in echo questions. There is no need for *wh*-element to move out of the island in order to get its question meaning.

Next, *wh*-element can take root scope in its original position. The meaning of *wh*-element is bounded to the root clause (i.e., main clause)

just like *wh*-element of standard *wh* questions which is moved to <Spec, CP>. The term root scope was stated by Sobin (2010). Consider examples in (14). *Where* in (14A) has a scope over *wh*-complement clause while *WHERE* in (14B) has a scope over the entire main clause even though it lies in the embedded clause.

- (14) A. It is obvious who lives where.
 B. It is obvious who lives WHERE?

Even verbs can be echoed with *wh*-element, which is impossible in standard *wh*-questions. As shown in (15), the verb *throve* is replaced with *WHAT* irrespective of its syntactic category. In standard *wh*-questions verb itself cannot be replaced with *wh*-element.

- (15) A: It really thrive.
 B: It really did WHAT?

(Janda, 1985, as cited in Artstein, 2002)

The last distinctive property of echo questions is that *wh*-element bears an accent and gets focus unlike standard *wh*-element. Beck and Reis (2018) emphasizes that echo *wh*-element ‘obligatorily’ bears focus and main stress on it. Artstein (2002) attributes question interpretation of echo questions to the focus and focus marking on the *wh*-element. Normally, what is already given in the context does not get focus while the newly introduced element does. As we discussed above, echo questions ‘echo’ what is already uttered by the other interlocutor. Nevertheless, echo *wh*-element gets focus because it (i) indicates disputed element with which the speaker does not agree or (ii) is considered as a newly given element due to the misperception(mishearing) of the speaker. This last property of getting inherent focus plays an important role when analyzing echo ellipsis. Related discussion will be done in section 5 and 6.

The main focus of the present paper is on the analysis of echo ellipsis not on the characteristics of echo questions. We have therefore looked briefly about its properties compared to standard *wh*-questions in this section. To summarize, echo questions have distinctive properties as follows:

- (16) Properties of echo questions
- i. Echo questions echo the immediately preceding utterance.
 - ii. The structure and content of the previous utterance are retained in echo questions somehow.
 - iii. *Wh*-element in echo questions stays in-situ.
 - iv. Echo questions are insensitive to locality constraint such as island effect.
 - v. *Wh*-element in echo questions has a root scope.
 - vi. Even verb can be echoed with *wh*-element.
 - vii. Echo *Wh*-element bears an accent and gets focused.

In the following section, I will discuss the ellipsis phenomena of echo questions. Then I examine the impossibility of widely accepted approach—movement-and-deletion approach (MDA, hereafter) proposed by Merchant (2001)— for the account of these phenomena. Let's see the examples of ellipsis in echo questions first.

3. Echo ellipsis

As already mentioned, not many studies have been conducted related to the echo ellipsis. Ginzburg and Sag (2001) used the term *reprise sluice* to refer to all kinds of remnant constructions of reprise questions. Although they used the term *sluice*, their analysis was not based on the minimalist approach but on the nonstructural approach. In their approach, the fragment is base generated as it is. Griffiths et al. (2018a, b) argued

that they firstly examined reprise fragments from the minimalist approach. They, however, rely on QUD and do not assume the identity condition on ellipsis either of syntax or semantics.

To propose my own analysis of echo ellipsis, let's first see the relevant examples. Examples from (17) to (19) are overview instances of echo ellipsis. (Note that elements that are elided are crossed out using strikethrough, while the remnant is not.)

- (17) A: David took Lunar Eclipse to the hospital yesterday.
B: David took WHOM to the hospital yesterday?
- (18) A: Bustamente y Bacigalupo plays the violin badly.
B: WHO plays the violin badly?
- (19) A: The man that kissed Dracula is coming to dinner.
B: The man that kissed WHO is coming to dinner?

3.1 MDA approach of ellipsis

Examples given above show that ellipsis does occur in echo questions. Each *wh*-element survives deletion and stands alone as a remnant. At first glance, this phenomenon looks similar to sluicing examples like (20) where *wh*-element raises to <Spec, CP> and TP is deleted subsequently.

- (20) Abby was reading something, but I don't know [_{CP} what [_{TP} she was reading t]].

Merchant (2001) argues that the sluicing occurs via MDA in that *wh*-element is moved and the constituent TP is deleted. Indefinite (i.e., something) in the antecedent clause and *wh*-element (i.e., what) in the sluiced clause are focus-marked and quantifier raised to the <Spec, CP> in LF to meet the semantic identity. To see this, consider LF

representation (21) of (20) simplified from Hartman (2011).

- (21) someone [λx . Abby was reading x] ... what [λy . she was reading y]

This analysis tells us that *wh*-element raises to <Spec, CP> not only in syntax and but also in LF as it is focus-marked. It appears to be an adequate approach to the echo ellipsis since *wh*-element in it gets focus inherently. When we apply MDA to (17B) and (18B), relevant derivation will be (22) and (23), respectively. (Note that F means focus)

- (22) [_{CP} [WHOM]_F [_{TP} David took t to the hospital yesterday]]?
- (23) [_{CP} [WHO]_F [_{TP} t plays the violin badly]]?
- (24) [_{CP} [WHO]_F [_{TP} the man that kissed t is coming to dinner]]?

The derivation of (22) and (23) via MDA seems plausible. *Wh*-element is focused and moved to the edge of CP. Consider (24), the derivation of (19B) through MDA. However, let's remind that echo *wh*-element remains in-situ. Due to this property, echo questions do not show the island effect unlike standard *wh*-questions. For *WHO* in (24) to undergo movement, it should violate the island effect because it gets out of the island. This needs an explanation. How can we explain the *wh*-movement out of the island in (24)? It is already examined in Merchant (2008) that in case of sluicing, island effect is repaired since the violating trace is eliminated upon deletion. Briefly speaking, island effect can be repaired in sluicing of standard *wh*-questions. In the same line, we can extend this idea to echo ellipsis. There seems no reason to disallow the *wh*-movement out of island in echo questions (24), which supports MDA for echo ellipsis.

However, when we look more thoroughly, MDA for echo ellipsis meets

several challenges. Note that *wh*-movement in sluicing standardly conforms to regular *wh*-movement in *wh*-questions. That is, what cannot move in standard *wh*-questions also cannot move in sluicing construction. (We saw the exception in case of island repair above.) Based on this parallelism, I suggest three phenomena which are hard to explain via MDA.

3.2 Why is MDA not suitable for echo ellipsis?

3.2.1 Echo ellipsis of coordinated conjunct

I have just discussed that complex NP constraint is repaired by ellipsis via MDA. However, there still exists an island effect which isn't able to be explained by MDA. I suggest new evidence that echo ellipsis does not show conjunct island effect. Extraction of the only one conjunct of a coordinate construction is not allowed in standard *wh*-questions as in (25). On the other hand, in echo questions like (26), one conjunct can be replaced with *wh*-element. What's more, this *wh*-element can serve as a remnant after the ellipsis occurs. MDA cannot explain this phenomenon since the movement of *wh*-element is not allowed in sluicing construction.

(25) *What does John know Jane ate beans and *t*?

(26) A: John knows Jane ate beans and squid.

B: John knows Jane ate beans and WHAT?

B': and WHAT? (adapted from Artstein, 2002)

3.2.2 Remnants of echo ellipsis vary in size

(27) A: John thinks that Pete beat Trump.

B: WHOM?

B': beat WHOM?

B'': Pete beat WHOM?

(adapted from Griffiths et al., 2018a)

In case of ellipsis, echoing the preceding utterance (27A) can vary from (27B) to (27B''). This phenomenon is also observed in Griffiths et al. (2018a). Even the VP *thinks that Pete beat WHOM* can behave as a remnant. Let's apply MDA assuming that it is on the right track for echo ellipsis. (27B) seems unproblematic since in standard *wh*-questions it can be fronted. (i.e., *Who(m) does John think that Pete beat?*) What about other cases? Can (27B'-B'') be explained with MDA? MDA fails to explain the movement of *beat WHOM* in (28). There is no way to operate this movement.

(28) *_{[CP [beat WHOM]_F [_{TP} John thinks that Pete t]]?}

3.2.3 Pied-piping of predicative XP

Preposition can be pied-piped with *wh*-phrase or stranded in its base position in standard *wh*-questions when the phrase serves as an argument as in (29). In contrast, when PP is a predicate of the clause, pied-piping is not allowed and preposition must be stranded as in (30). Kim (2018) extends this observation to other syntactic categories and generalizes that predicative XP is incompatible with *wh*-phrase. Thus, the pied-piping of predicative XP in English is impossible.

(29) A: [Who] did you talk to t?
B: [To whom] did you talk t?

(30) A: [Where] are you from t?
B: *[From where] are you t?

However, when we look at the echo ellipsis example (31), it is found that predicative PP is compatible with *wh*-element. To explain it with MDA,

we need to assume that pied-piping has been carried out to derive echo ellipsis.

- (31) A: Is Jane from Korea?
B: From WHERE?

In order for *from WHERE* to be fronted, we need an extra rule to allow the pied-piping of predicative phrase in case of echo ellipsis. Making additional rules to constrain each phenomenon is unwilling, which leads to the conclusion that an alternative account is needed. Besides, as predicative phrase is already compatible with *wh*-element in full-fledged echo questions, we can simply think that employing such pied-piping is superfluous. Another approach which accords with its inherent property is required.

In this section, we have discussed that MDA cannot explain the fronting (or movement) of phrases including *wh*-element in echo questions. Remnants of echo ellipsis include phrases that cannot be fronted in standard *wh*-questions. This indicates that for MDA to be plausible an extra constraint (or rule) is needed to permit the exceptional movement of echo ellipsis remnant, which is unwilling. An alternative approach should be adopted to explain it. In section 4, before suggesting solution, I briefly outline in-situ analysis of sluicing and fragment answers. Borrowing the ideas discussed, I propose my analysis of echo ellipsis in section 5.

4. In-situ analysis of sluicing and fragment answers

An in-situ approach for ellipsis phenomena is not brand new in the literature. Many studies have argued against Merchant's movement and deletion approach. In this section, I present a brief overview of in-situ strategy for sluicing in English proposed by Kimura (2010) and Abe

(2016)’s proposal which analyzes the derivation of short answers in Japanese following Kimura’s in-situ approach. Their idea of in-situ approach sheds light on my proposal later.

Kimura (2010) offered counterexamples to the island repair discussed by Merchant (2008). He proposed that in case of sluicing, “argument *wh*-phrases do not exhibit island effects while adverbial adjunct *wh*-phrases do.” (p.47) Merchant’s repair by ellipsis only covers the cases in which *wh*-phrases are arguments. Thus, in order to accommodate a full range of data with respect to island effects, Kimura proposed that in-situ analysis for sluicing is necessary. He adopted Agbayani (2006)’s idea, which separates the *wh*-movement operation into movement of feature F and pied-pipe part. “Pied-pipe is regulated by the PF adjacency condition” (p.48) which demands feature F and its related category (i.e., *wh*-phrase) be adjacent in that no overt element is intervening between them.

(32) John bought something, but I don’t know what.

(33) [_{CP} *wh* [_{C'} C_[Q] [_{TP} John bought *what*]]]

Feature *wh* and its related category *what* should be adjacent in (33). This PF adjacency can be met by pied-piping of *what* or deleting the elements intervening between F *wh* and *what*. He proposed that sluicing can target non constituent for deletion opposed to Merchant’s constituent (i.e., TP) deletion. Until now, we have examined that *wh*-element in echo questions does not bear the same feature and properties with standard *wh*-element. Therefore, employing Kimura’s approach directly to echo ellipsis seems inadequate.

Let’s see Abe (2016)’s analysis for short answers (or fragment answers) in Japanese which sheds light on the analysis of echo ellipsis I propose. Following Kimura’s approach and Abe (2015)’s in-situ approach to sluicing, he proposed that fragment answers are derived by simply deleting a constituent except for the focused remnant in their original

position. In his Japanese data, the phrase such as (34B), which is an answer to the question (34A) and carries [Focus], survives the deletion of CP. While Kimura assumed non constituent deletion, Abe proposed constituent deletion similar to Merchant (2004)'s analysis; CP is deleted except for the focused phrase. See (35) which demonstrates this operation.

- (34) A: Kanozyo-wa dera-ni atta no?
 she-TOP Who-DAT saw Q
 ‘Who did she see?’
 B: John-ni desu.
 John-DAT be
 ‘John.’
- (35) A. [_{FP} [_{CP} kanozyo-ga JOHN-ni atta no] desu]
 B. [_{FP} [_{CP} kanozyo-ga JOHN-ni atta no] desu]

Focused phrase *John-ni* survives ellipsis site CP which gets deleted. Remnant phrase stays in-situ and survives the deletion due to the focus it bears. Now, we need to consider how the identification condition on ellipsis site is decided. Abe proposed that identification condition in this case is semantic in nature. I will adopt Abe's operation of deletion and identification condition to analyze echo ellipsis. His proposal of identification condition will be elaborated in section 5.

5. In-situ analysis of echo ellipsis

Based on what I have examined in section 4, I propose an in-situ analysis of echo ellipsis. I support the idea that ellipsis is an operation such that the remnant is derived from full-fledged sentence. Due to the in-situ property of echo *wh*-element, I think in-situ analysis fits naturally into its

inherent characteristic. Moreover, as *wh*-element in echo questions gets focus inherently, there is no need to introduce an extra Focus P to make a room for the remnant to land. Following what's discussed in Abe (2016), the in-situ analysis and derivation of echo ellipsis is as follows. (The representation of (36) is adapted from Griffiths et al. (2018b))

- (36) In-situ deletion in echo ellipsis
 $[_{CP} \dots [\dots wh \dots]_F \dots] \rightarrow [_{CP\emptyset} \dots [\phi \dots wh \dots]_F \dots]$,
 where CP is a constituent that is deleted.
 (ϕ means phonological realization, \emptyset means non-pronunciation
 and F means focus)
- (37) A. $[_{CP} \text{John thinks that Pete } [WHOM]_F]$?
 B. $[_{CP} \text{John thinks that Pete } [WHOM]_F]$?
- (38) A. $[_{CP} \text{John knows Jane ate beans [and WHAT]}_F]$?
 B. $[_{CP} \text{John knows Jane ate beans [and WHAT]}_F]$?
- (39) A. $[_{CP} \text{Jane is [interested in WHAT]}_F]$?
 B. $[_{CP} \text{Jane is [interested in WHAT]}_F]$?

Remnants including *wh*-element still remain after deletion takes place. The analysis in (36) can account for the simple case like (37) where the object is echoed with *WHOM*; additionally, it accounts for the examples discussed in section 3.2, which cannot be explained via MDA, repeated as (38) and (39). In a nutshell, *wh*-element does not undergo movement. As a result, island effect such as conjunct island (38) loses its validity and ellipsis is successfully operated. Moreover, predicative phrase remnant can be derived as in (39). In-situ analysis can derive ellipsis constructions much more simply than MDA.

In the last section, I did not elaborate how ellipsis site is decided in in-situ approach. As represented in (36), I assume that in case of echo

ellipsis, CP would be the ellipsis site. It is different from the standard approach of sluicing which deletes TP. I follow the identification condition proposed by Abe (2016) which is semantic in nature. Abe's identification condition covers various kinds of ellipsis including fragment answers, sluicing and VP-ellipsis. (Note that E-site means ellipsis site)

- (40) An E-site is identified with its antecedent if (i) they are semantically identical or (ii) they are in the relation of semantic inclusion.
- (41) α is semantically included by β if (i) α constitutes a presupposition of β or (ii) α satisfies the truth conditions of β
(p. 242)

The statement in (40i) accounts for the identification condition on VP-ellipsis and (40ii) accounts for the cases of sluicing and fragment answers. More specifically, (41i) stands for sluicing in that the antecedent clause of sluicing serves as a presupposition of sluicing construction. (41ii) stands for fragment answers in which the answer meets the truth condition of the questions.

As for the cases of echo ellipsis, (41i) can account for CP being an E-site of echo ellipsis. I argue that antecedent of echo ellipsis—the immediately preceding utterance—constitutes a presupposition of an echo question sentence. By virtue of its inherent property, echo questions 'echo' what is already given in the conversation except for the part that the hearer misconceives or fails to hear correctly. Thus, the content and the structure of the previous utterance is believed to be retained in the echo questions. I will examine Sobin (2010)'s derivation of echo questions and suggest that his analysis needs to be revised.

(42) Derivation of echo questions

A complementizer C_{EQ} selects the frozen CP structure of the previous utterance as its complement, where frozen CP is a copy of the CP structure of previous utterance with possible latitude for minor verbal form differences, but still preserving the declarative, yes/no question and *wh*-question character of the CP structure.

I think Sobin's analysis is a more elaborated version in the same line with Artstein (2002)'s assumption. He follows Dayal (1996) in that we need to introduce a layer above the CP which is in charge of giving question meaning to echo questions. In (42), C_{EQ} bears the feature [Int], which is interrogative, but it lacks the strong feature [*uwh**] unlike standard *wh*-questions. He also introduces a binding function [B_{EQ}] on C to bind interrogative-marked constituents in the CP. I will not elaborate the entire derivation of echo question proposed by Sobin here. I will just adopt the point related to the present discussion. Let's focus on the frozen CP stated in (42).

According to Sobin's account, C_{EQ} selects the CP of previous utterance as its complement. He focuses more on syntactic structure than semantic one in that the structure is frozen and preserved as a whole. I agree with his idea of selecting CP as a complement since it can cover every sentential type including *wh*-questions as in (43). (In the representation (44), features unrelated to the present article, i.e., binding function [B_{EQ}], are omitted)

- (43) A: What did Dracula drink at Mary's party?
B: What did WHO drink at Mary's party?

- (44) [$_{CP}$ [C_{EQ} [$_{CP}$ What did [$_{WHO}$]_F drink at Mary's party?]]]

However, I assume that in addition to CP structure, CP content should be

preserved in echo questions. In case of (44) the lower CP meets both structure and content identity with its antecedent whereupon deletion can be licensed unproblematically. On the other hand, as Sobin, himself, acknowledged in (42), some formal changes like verbal form differences (i.e., voice mismatch) do take place as in (10), repeated as (45) here.

- (45) A: Has Mary eaten the fried worms?
B: Has WHAT been eaten by Mary?

He considers this voice mismatch as trivial and makes a room for some formal variations. Nevertheless, there exists somewhat extreme case of echo construction where serious formal changes happen. Consider the example in (46).

- (46) A: Could Paul be schizophrenic after all?
B: You think Paul is WHAT?
B': Paul is WHAT? (Beck and Reis, 2018, p.376)

- (47) [_{CP} [_{CEQ} [_{CP} You think [Paul is WHAT]_F]]]?

Beck and Reis observed that (46B) serves as an echo question to (46A). Obviously, the structure of the previous sentence and the echo question is not the same at all. Despite having different structure, (46B) still functions as an echo question. More interestingly, one of native informants admits that (46B') can serve as an echo question as well. In order for (46B') to be derived, the lower CP in (47) should be construed as an ellipsis site. This indicates that (46A) should work as a presupposition of ellipsis site of (46B')—CP *You think Paul is WHAT*, which conforms to the identification condition of (41i). To cover more extensive data of echo question and echo ellipsis, not the structure of previous CP but the content of CP should be retained. Still I do not figure out how to regulate this semantic constraint on frozen CP. Assuming that

Sobin's derivation is on the right track, what is frozen is not the strict structure of the previous CP, but the content of the CP so that the previous CP can serve as a presupposition of the CP in echo question, which in turn identifies the ellipsis site for echo ellipsis.

6. How big can the remnant be?

So far, I have investigated how operation of echo ellipsis works. I proposed that deletion is implemented on the complement CP of C_{EQ} , and focused *wh*-element survives that deletion. One might notice that some instances of echo ellipsis demonstrate a remnant bigger than a single *wh*-element. Besides, the size variation of remnant is mentioned as a distinctive property of echo ellipsis in section 3. In light of the analysis made in this article, now we know that if the remnant including *wh*-element survives the deletion, it should have focus. Keep this in mind and see the examples of (27) repeated as (48) below.

- (48) A: John thinks that Pete beat Trump.
 B: WHOM? / beat WHOM? / Pete beat WHOM?

The size variation of the remnant was also observed in Griffiths et al. (2018a). They adopted Büring (2006)'s unrestricted vertical focus projection with which I also agree. The core argument is as follows:

- (49) Basic Focus Rule
 An accented word is F-marked
- (50) Unrestricted vertical focus projection
 Any subconstituent can project focus. (Büring, 2006, p.5)

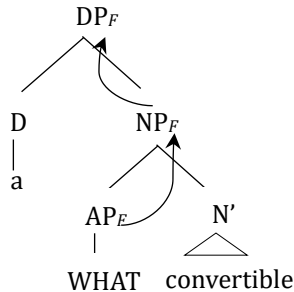
Now we all know that *wh*-element in echo question has an accent and

focus. This can be restated as Basic Focus Rule in (49). The restricted (or standard) vertical projection regulates that only heads and its complements can project focus. On the other hand, unrestricted version (50) develops the notion to the extent that focus projection from non-argument element such as attributive adjective, adjunct and indirect object is also possible.

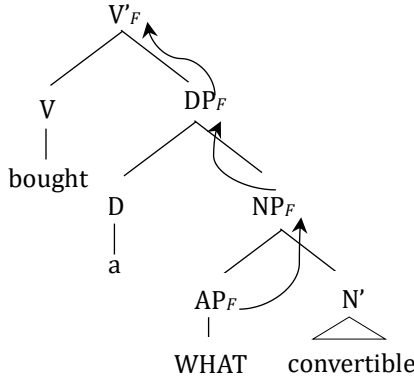
Unrestricted vertical focus projection is suitable for the present analysis since in echo questions not only arguments such as (48) but also non-arguments can be an echo *wh*-element. Examples in (51) show that attributive adjective is echoed. The focus from the *wh*-element is projected to its mother and this projection goes along the constituent node following the syntactic hierarchy. Through this projection of focus, a bigger phrase including *wh*-element can get focus and survive the deletion consequently. Focus projection of (51B) and (51B') is schematized in (52). (Unrelated nodes are omitted.)

- (51) A: I bought an amethyst convertible yesterday!
 B: a WHAT convertible?
 B': bought a WHAT convertible?

- (52) Focus projection from an adjective WHAT
 (i) Focus projection of (51B)



(ii) Focus projection of (51B')



Despite not being an argument or head, AP WHAT projects its focus to the mother and so on. The focus projection goes along with the syntactic hierarchy; thus, the remnant in (51B') can also successfully get focus and survive the deletion. Büring's unrestricted vertical focus projection rule can account for how the remnant of echo ellipsis varies in its size.

7. Conclusion

I have argued in this article for the in-situ approach to echo ellipsis. Given that echo *wh*-element does not undergo movement intrinsically, I proposed that English echo ellipsis should be derived via in-situ deletion rather than the MDA by Merchant (2001, 2004). Based on the distinctive properties of echo questions compared to standard *wh*-questions, I investigated some peculiar phenomena of echo ellipsis already discussed in the literature and also suggested new evidence which cannot be explained via MDA. The in-situ analysis in this article follows the idea of Abe (2016)'s in-situ analysis of short answers (fragment answers). This analysis explains the phenomena which are problematic to MDA, by leaving the *wh*-element in their original position. With respect to the

ellipsis site, I also followed Abe's notion that identification condition operative for licensing deletion is semantic in nature. That is, the previous utterance of echo questions should serve as a presupposition for the echo questions to license deletion properly. Finally, I argue that remnant of echo ellipsis can vary in its size, which results from the unrestricted vertical focus projection proposed by Büring (2006).

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